

Report on

Visit to “Zero waste generated Water Treatment Plant (Khanpur, Vadodara) and Sewage Treatment Plant (Rajiv Nagar, Vadodara)”

Department of Civil Engineering, GCET has organized one day (10/10/22) educational visit to “Zero waste generated Water Treatment Plant (Khanpur, Vadodara) and Sewage Treatment Plant (Rajiv Nagar, Vadodara)”. A total of 27 students (3rd year) along with Dr. Snehal Popli visited the treatment units.

Aim of Visit:

The main aim of visit is to understand the various components of water and sewage treatment plant and functions of each component. To get the knowledge of zero waste generated water treatment plant and newly constructed sewage treatment plant with latest technology.

About the Visit:

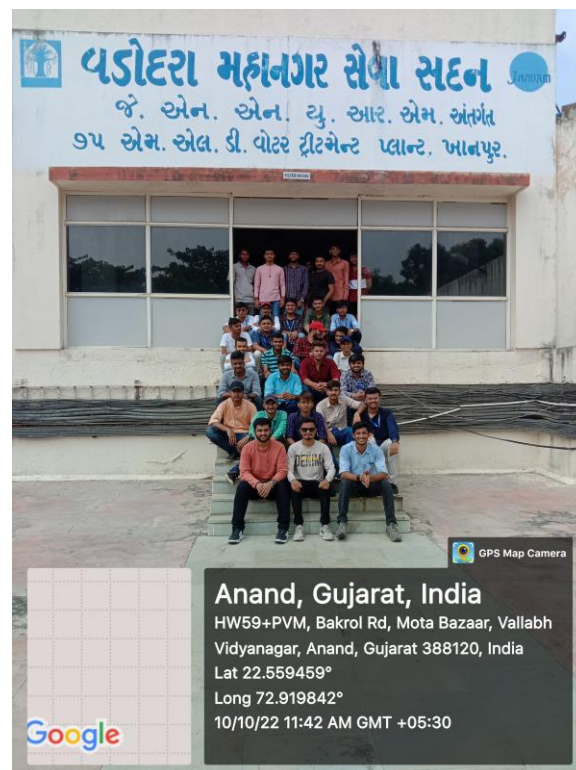
Report on a visit to Water Treatment Plant (Khanpur)

The capacity of the Zero waste generated water treatment plant is 75 MLD and supply treated water to the Gotri, Harinagar, Vasna and other nearby region. The source of water is Naramada Canal. Components Observed are:

- Intake sump
- Flash Mixer
- Clarifloculator
- Rapid Sand filter
- Clear water reservoir
- Chlorinator unit
- Dirty water and sludge collection sump
- Sludge thickener
- Air Compressor

Initially, they do the pre-chlorination of the water. Powder Activated Carbon (PAC) was added to the water in the flash mixer tank. Water is then allowed to go in clariflocculator. Two units of clariflocculator are provided. The flocculator depth is around 12 m and the outer clarifier depth is 6 m. Scrapers provided in the clarifier that takes 45 min to complete one revolution. Sludge from the clarifier is collected in the dirty water sump. After clariflocculator, water is entering into the Rapid sand filter. There are 8 units of Rapid sand filter. The filtered water is collected into the clear water sump. There are various apprentices provided for backwashing. The backwashing is done 6 times a day. The wash water is again collected in the dirty water sump. The students have witnessed the backwashing procedure. First of all, the air is allowed to pass through the compressor to lateral pipes to main central pipe to filter media for 15 min. Then the wash water enters in the lateral pipe through the wash water valve. The wash water is collected in dirty water sump. After the clear water sump the water is sent to the water tank to the cities.

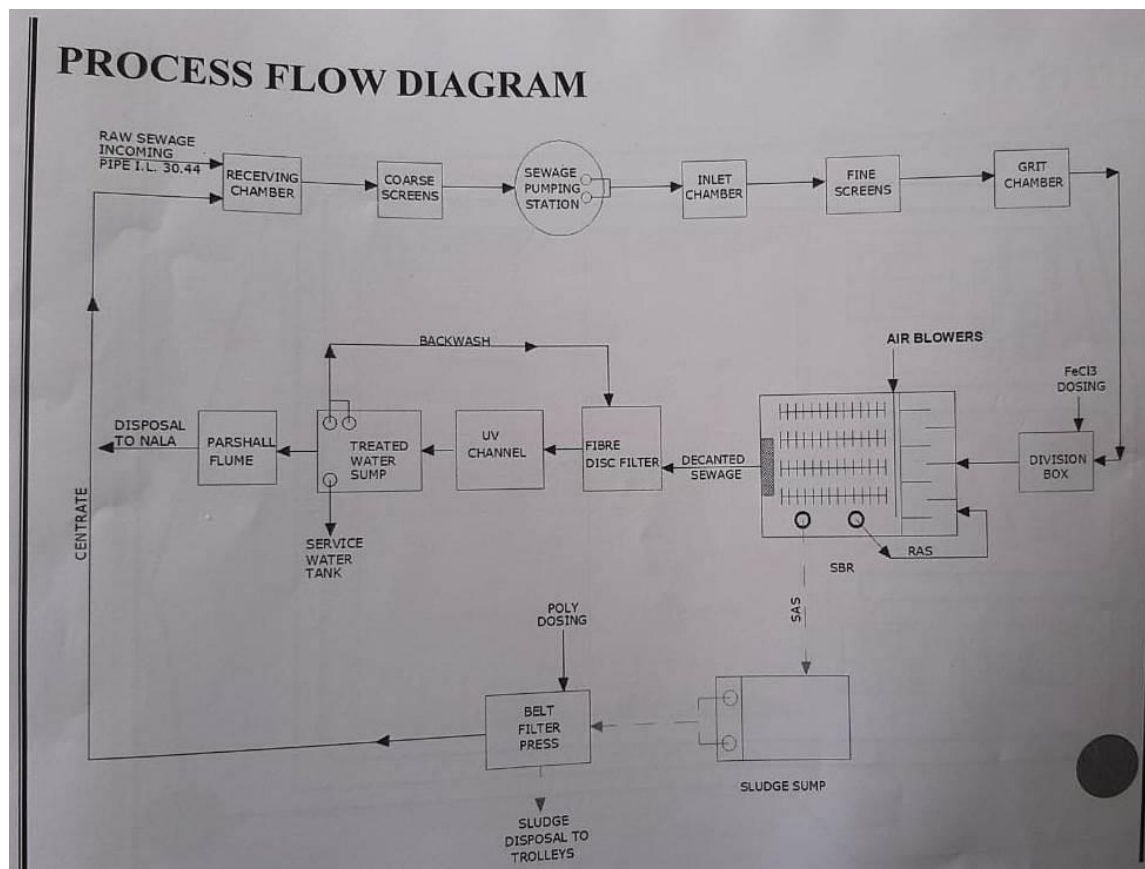
The dirty water which is collected in the dirty water sump is then going into the sludge thickener tank. There are two sludge thickener tanks. Separated sludge is going into the fertilizer making machine. The water separated from the thickener is again going to the inlet chamber. So this is reason why they are saying it is zero waste generated treatment plant.



Report on a visit to Rajivnagar Sewage Treatment Plant, Vadodara

The Vadodara Municipal Corporation (VMC) has purchased a plot measuring 69,000 sqmt at Rajivnagar for setting up the city's largest sewage treatment plant (STP) with a capacity of 78 MLD (million litres per day).

The plant will treat sewage up to parameters that will have levels of Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Suspended Solids that will be suitable for the crocodile park, which is to be set up on the bank of Vishwamitri river passing through the city," The new technology is utilized in the plant. The layout of the plant is mentioned below.



It contains various components such as coarse screen, fine screen, grit chamber, SBR, and UV channels. The size of inlet chamber is 4.75 x 3.5 x 3.5 m. The size of the screen chamber is 7.5 x 1.45 x 1.0 m.

It has the latest technology for the removal of organic matter that is Sequential batch reactor. It has four steps :

Step 1: Fill/Aeration

Step 2: Aeration

Step 3: Settling process

Step 4: Decanting

After SBR, the sewage is entering in the UV light chamber where all the coliforms will be disinfected from the sewage and then it can be disposed off in the river.

The sludge collected from SBR is sent to Belt Filter Press where it undergoes three steps of dewatering, medium pressure filtration and high pressure filtration and finally the sludge cake will be formed and utilised as fertiliser.

Overall, it was a very informative visit for all the students. The working staff of both the treatment plants was highly cooperative and made maximum efforts to make us understand the concepts lying behind each and every unit very precisely.

